TRUE ROBOTICS

TAKING OFF WITH PILOT

GRADES 3–5

This document lists the North Dakota learning standards addressed by Taking Off with Pilot, True Robotics' grades 3–5 robotics curriculum. Standards are grouped by subject and grade level, with codes and wording as published by the North Dakota Department of Public Instruction.

28	6	5	39
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

28 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
3	3.NO.NBT.3	Add and subtract within 1000 using place value strategies, algorithms, and/or the relationship between addition and subtraction.
3	3.NO.NBT.4	Multiply one-digit whole numbers by multiples of 10 within 100.
3	3.NO.NF.2	Represent and understand a fraction as a number on a number line.
3	3.NO.NF.5	Compare fractions of the same whole having the same numerators or denominators, using symbols >, <, and = by reasoning about their size (fractions should be limited to denominators of 2, 3, 4, 6, and 8 and should not exceed the whole).
3	3.AR.OA.4	Use strategies and visual models to solve authentic word problems with multiplication within 100, including unknowns, using grouping models and equations.
3	3.AR.OA.5	Use strategies and visual models to solve authentic word problems with division within 100, including unknowns, using grouping models and equations.
3	3.GM.G.2	Sort quadrilaterals into categories based on attributes.
3	3.GM.M.1	Measure lengths using rulers marked with halves and fourths of an inch.
3	3.GM.M.3	Tell and write time to the nearest minute and measure time intervals in minutes.
3	3.GM.M.4	Solve elapsed time authentic word problems on the hour and the half-hour, using a variety of strategies.
3	3.GM.M.6	Solve problems involving the perimeters of rectangles given the side lengths or when given the perimeter and unknown side length(s).
3	3.GM.M.8	Find the area of a rectangle with whole-number side lengths by modeling with unit squares; show that area can be additive and is the same as would be found by multiplying the side lengths.

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GRADE	CODE	STANDARD
3	3.DPS.D.2	Generate data and create line plots marked in whole numbers, halves, and fourths of a unit.
4	4.NO.NBT.4	Add and subtract multi-digit whole numbers to the one million place using strategies, including the algorithm.
4	4.NO.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers. Show and justify the calculation using equations, rectangular arrays, and models.
4	4.NO.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using place value strategies. Show and justify the calculation using equations, rectangular arrays, and models.
4	4.NO.NF.5	Compare and order fractions having, unlike numerators or denominators. Record comparisons using the symbols >, <, and =. Justify using a visual fraction model (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).
4	4.AR.OA.4	Find factor pairs and multiples within the range of 1-36 while classifying numbers as prime or composite.
4	4.AR.OA.5	Interpret multiplication equations as a comparison. Represent multiplicative comparisons as multiplication equations.
4	4.GM.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size.
4	4.GM.M.3	Identify and use the appropriate tools, operations, and units of measurement, both customary and metric, to solve problems involving time, length, weight, mass, and capacity.
4	4.GM.M.5	Apply the area and perimeter formulas for rectangles, including connected rectangular figures, in problems.
4	4.DPS.D.3	Utilize graphs and diagrams to represent and solve authentic word problems using the four operations involving whole numbers, benchmark fractions, and decimals.
5	5.NO.NF.3	Solve authentic word problems by adding and subtracting fractions and mixed numbers with unlike denominators using visual fraction models and equations.
5	5.AR.OA.4	Find factor pairs and multiples within the range of 1-100 while classifying numbers as prime or composite.
5	5.GM.M.1	Generate conversions among different-sized standard measurement units within a given measurement system, both customary and metric. Use these conversions to solve multi-step, authentic word problems.
5	5.GM.M.2	Find the area and perimeter of a rectangle, including connected rectangular figures, with fractional side lengths.
5	5.GM.M.3	Recognize volume as an attribute of rectangular prisms and measure volume by counting unit cubes.

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SCIENCE

6 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
3	3-PS2-1	Plan and conduct an investigation to prove the effects of balanced and unbalanced forces on the motion of an object.
3	3-ET1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3	3-ET1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
4	4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.
4	4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.
5	5-PS1-3	Make observations and measurements to identify materials based on their properties.

COMPUTER SCIENCE AND CYBERSECURITY

5 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
4	4.DD.2	Create a simple algorithm to solve a problem using coding patterns (e.g., sequences, loops, or conditionals).
4	4.DD.3	Test the outcome(s) of algorithms that use coding patterns (e.g., sequences, loops, or conditionals).
4	4.AP.2	Identify and correct errors in algorithms or processes.
5	5.HS.1	Use software features and hardware to accomplish a task.
5	5.DD.2	Create a simple algorithm to solve a problem using coding patterns (e.g., loops, conditionals, functions, or variables).

SOURCES & NOTES

- The official mathematics, science and computer science standards for North Dakota, as published by the North Dakota Department of Public Instruction.
- Codes and standard wording are reproduced from the official standards documents. Clarification statements, examples and assessment boundaries are omitted.
- Grade shows the grade level at which True Robotics lessons address each standard. A range (for example K–2) marks a standard written for a grade band.
- Standards text remains the property of its publisher and is reproduced here for alignment reference only.
- A lesson-level crosswalk is available on request at info@truerobotics.org.

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